antibody, hMN14, that recognizes the CEA. No other IgTCR or Ig-T cell molecules has the amino acid sequence of the hMN14 CEA-recognition domain which I employ, and which I have proven to be effective (Fig.5). There is no patent of the hMN14 sequence in chimeric state with T cell or other effector cell molecules, or with the use of a modified hinge structure.

An invention exists as to the general chimeric Ig molecules with cell receptor proteins (Capon et al, 1996). My invention is distinguished by targeting the CEA antigen, by the uniqueness of the hMN14 antibody sequences employed, by the new concept in modification of hinge and sFv linker domains that improves the cell surface expression, and by the combination of such anti-CEA hMN14 receptor molecules expressed in effector cells which are stimulated in concert specifically by the same tumor antigen or by a different tumor antigen or antigens. These chimeric hMN14 molecules are in addition to and outside of the claims of the hMN14 patent (Hansen et al., 1994), but reference the uniqueness of these sequences (Fig.4).

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Claims

What is claimed is:

1. A chimeric molecule comprised of the CEA binding domain of humanized antibody MN14 as a single chain antibody with a (GGSGS)3 linker, the zeta signaling chain of the T cell receptor and an intervening CD8α hinge in which the cysteine residues have been mutated, with the sequence of Figure 3.

2. A molecule of claim 1 in which other signaling chains of T cells or other cell types are substituted, or in which a different hinge molecule or no hinge molecule is substituted, or a